

# Green retailing practices: An exploratory comparison between Chinese and British retailers

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## ABSTRACT

As the link between supply and demand, retailers can play an important role in a supply chain's green operations and logistics activities, which are one of the key contemporary concerns of governments and general public. China as a huge, fast-developing and opening marketplace has been attractive to British and other international retailers; however the competition facing these retailers in this marketplace is becoming more intensified. Research has evidenced that the British retailers have started greening their business operations earlier than Chinese businesses that are just at the starting stage, namely the British ones would have an early mover advantage with green operations as a characteristic competitive strength. Thus the further comparative exploration by this research on the current green status/approaches of both Chinese and British retailers will inform managers in these businesses (also referential to other countries' retailers) in developing strategies incorporating green approaches for enhancing their competitiveness in Chinese retail marketplace, besides constructively enriching the green theories in retail sector.

**Keywords:** Retail, Green, UK, China, Competitiveness, Chinese marketplace

## 1. INTRODUCTION

Environmental issues are faced by all the organizations along supply chains; they have been studied by many researchers (Hazen, et al., 2012; Dahlmann, et al., 2008; Childe, 2002; Murphy and Poist, 2000; Holt and Ghobadian 2009; Zhu, et al., 2005; Simms, 1992; van Hoek, 1999), and also have attracted continuous attention from the business professionals and consumers.

Environmental friendly and protective activities/projects are termed by many as green initiatives; this reflects the recognition and emphasis on the importance of green operations, forward supply chain activities and reverse logistics activities (Srivastava, 2007; Hazen, et al.,

2012; Hazen, 2011; Sarkis, et al., 2011), which are one of the key foci for managers in the development of their operational practices and strategies.

As an indispensable link of demand and supply sides in the supply chains, retailers can play an important role for strengthening and speeding up the “greening” process (Jones, 2005; McGoldrick, 2002; Durieu, 2003). Especially they can function as a champion assuming a leading role in green initiatives, which could drive the supply chain collaboration and efficacy enhancement (McCutcheon and Stuart, 2000). However, the authors have found that the amount of literature focusing on green initiatives in retail is rather small, compared with that in other industries. Nevertheless, as evidenced by research (Zhu, et al., 2005; Centre for Retail Research, 2012) as well as case studies (e.g., Evans and Denney, 2009; Fuentes, 2011), the demand from practical businesses on the guidance of up-to-date green strategies/practices becomes much stronger under the context of globalisation and the increasingly reinforced environmental protection laws/regulations (e.g., DTSCS, 2010).

In recent years, as a huge, fast-developing and opening marketplace, China has been attracting international retailers (herein referred to foreign retailers operating in China) establishing local operations there (Perkowski, 2012; Mei, 2011). However, under the current context of increasingly intensified competition, for ensuring a healthy survival, retailers not only need to explore new marketplaces, but also need to retain and expand their market shares; to achieve these targets, retailers must harness more advanced competences over their competitors (Mei, 2011; Fan, 2010; Liu, 2007). Currently, the market environment in China is becoming harder for the international retailers to survive (Perkowski, 2012; Mei, 2011; PPZW, 2009). After years’ co-existence with their international competitors, the Chinese retailers have become more experienced and competent, through learning from their foreign counterparts’ and their own failure and success; consequentially, the foreign retailers have gradually lost many of their previous advantages, reflected by some of them failing to gain enough market share and profit and having to withdraw fully or partially from Chinese marketplaces (Perkowski, 2012; Mei, 2011; PPZW, 2009).

As contended by researchers (Norton, 2010; Jones, et al., 2008; Sands and Ferraro, 2010; Kotzab, et al., 2011), going green can ensure the retailers to attract and retain more customers as well as to explore new markets successfully. Research (e.g., Jones, et al., 2005; Simons, 1992; Sarkis, et al., 2011; Jones, et al., 2008) has also evidenced that the British retailers have started greening their business operations earlier than Chinese businesses that are just at the starting stage (Zhu, et al., 2010). Thus, to compete with the Chinese retailers who are becoming more competitive and catching up, the British retailers would have an early mover advantage with green operations as a characteristic competitive strength. However, there is still recent research claiming that the green initiatives of the western retailers have not reached the level they should be at (Kotzab, et al., 2011; Sands and Ferraro, 2010; Centre for Retail Research, 2012; Childe, 2010).

In view of the aforementioned circumstances, a further exploration on the current green status of both Chinese and British retailers is meaningful; such an investigation can provide insights and guidance for the development and implementation of more competitive strategies/practices, it is also in line with the researchers' call for further exploration on these issues (e.g., Holt and Ghobadian, 2009; Hervani, et al., 2005). Following the aforementioned thought, the aim of this research is to explore and compare between Chinese and British retailers on:

- 1) The awareness of the importance of green business operations;
- 2) The drivers and barriers for going green;
- 3) The willingness to lead green initiatives in a retail chain;
- 4) The currently applied green approaches in real world retailers.

Consequently, the research findings from the comparison of the green retailing practices between British and Chinese retailers can be used as a constructive guidance for them to ensure a stronger position while entering/operating in Chinese marketplace. The managers in both British and Chinese retailing businesses can rely on the identified approaches to develop informed strategy incorporating green as a strategic strength to build up increased competitiveness.

## 2. GREEN ISSUES IN RETAIL AND IDENTIFIED GREEN ELEMENTS

The green issues have received extensive attention from governments, general public and the businesses (Hazen, et al., 2012; Kotzab, et al., 2011; Holt and Ghobadian, 2009; Jones, et al., 2005; Murphy, et al., 1996; Murphy and Posit, 2000; Mollenkopf, et al., 2010). Countries have stipulated laws/regulations (e.g., DTSCS, 2010) and provided financial investments to regulate and support green activities to protect the environment and natural resources. Meanwhile standard organizations and authorities also established national and international environmental standards for businesses to follow (e.g., ISO, 2013). Under this general context, the real world businesses have to devote substantial efforts towards reducing the negative impacts of their operations to the environment; and many of them are also willing to be committed towards green initiatives (Childe, 2010; Inman, 2002; Jones, et al., 2005; Murphy and Posit, 2000).

The retail businesses contain operational, forward and reverse logistics activities directly or indirectly impacting the environment, which is a key challenge currently facing the general management. Meanwhile as the link between demand side and supply side of supply chains, retailers can heavily influence the green patterns of producers and customers (Jones, et al., 2005). Hereafter, for emphasising the important role of retailers within a supply chain's green initiatives, the supply chain from this perspective is termed as retail chain (Wang, et al., 2011).

Green activities can benefit retailers through such as increasing the customer loyalty (Hazen, et al., 2012); and there have been green schemes implemented by businesses (Anonymous, 2007; Jones, et al., 2008). Nevertheless, researchers (Holt and Ghobadian, 2009; Centre for Retail Research, 2012; Hervani, et al., 2005) still have expressed the need for further understanding and exploration on the level of the businesses' commitment and knowledge of green initiatives. This need is not only salient for retailers in developing countries such as China (DTSCS, 2010; Zhu, et al., 2010), but also for retailers in developed countries, such as UK (Kotzab, et al., 2011; Centre for Retail Research, 2012). Although green initiatives have been implemented in developed countries for long time, it is still necessary and important for businesses to further improve the current status (Childe, 2010; Holt and Ghobadian, 2009; Kotzab, et al., 2011; Centre for Retail Research, 2012).

Thus in view of i) retailers may take the advantage of their advanced green knowledge and competence to enhance and ensure their competitive position in Chinese marketplace and ii) what practices/strategies are currently applied for businesses to realise green competitiveness are still not sufficiently understood (Evans and Denney, 2009; Wang, 2010), a comparison on the British and Chinese retailers' green status and approaches will be meaningful and useful. The findings from the comparison can provide insights and guidance to retailers' green initiatives, and help them progress in competitiveness enhancement. Especially, it will be very valuable in facilitating retailers' international strategy development targeting the Chinese marketplace, to avoid the fates of some international retailers having failed or are failing to survive well there (Mei, 2011; PPZW, 2009).

For proceeding with the comparison, first of all through literature review, the authors identified the elements depicting the retailers' green status. These elements also form the questionnaire content for later stage survey investigation. The elements and their corresponding sources are summarised in Table 1-1 to 1-4.

Table 1-1. Elements of awareness of the importance of green operations

Elements of awareness of the importance of green concept (impact to the environment of the business operations)	Literature sources supporting and inspiring the proposition of these elements
1 Acceptance of green operations and logistics concept and recognition of their importance from the employees in an organization	Norton (2010); Sands and Ferraro (2010); Kotzab, et al. (2011); Vachon and Klassen (2006); Holt and Ghobadian (2009); Shang, et al. (2009)
2 Understanding from the employees of an organization on the achievement of the reduction of wasted water, materials and air pollution through green activities	Holt and Ghobadian (2009); Norton (2010); Sands and Ferraro (2010); Vachon and Klassen (2006); Shang, et al. (2009)
3 Recognition of employees on the realisation of decreased use of hazardous/harmful/toxic materials and reduced possibility of environmental accidents	Vachon and Klassen (2006); Norton (2010); Holt and Ghobadian (2009); Shang, et al. (2009)
4 More investment into business is needed for implementation of green initiatives	Sands and Ferraro (2010); Norton (2010); Vachon and Klassen (2006); Holt and Ghobadian (2009); Shang, et al. (2009)
5 Realisation of cost reduction for waste treatment and materials and energy consumption through green initiatives	Norton (2010); Kotzab, et al. (2011); Holt and Ghobadian (2009)
6 Improvement on delivery service and operations capacity and reduction of inventory level through green initiatives	Vachon and Klassen (2006); Kotzab, et al. (2011); Holt and Ghobadian (2009)
7 Increase of quality performance level and reduction of the scrap rate through green initiatives	Kotzab, et al. (2011); Vachon and Klassen (2006)
8 Thorough communication of the environmental information/issues within the organization among employees and departments	Norton (2010); Holt and Ghobadian (2009); Shang, et al. (2009)
9 Establishment of environmental management system and allocation of resources to implement that	Kotzab, et al. (2011); Norton (2010); Vachon and Klassen (2006); Shang, et al. (2009)
10 Sufficiency of knowledge and technology in implementing green initiatives	Norton (2010); Kotzab, et al. (2011); Shang, et al. (2009)

Table 1-2. Elements of drivers for going green

Elements of drivers for retailers' green initiatives	Literature sources supporting and inspiring the proposition of these elements
1 Governmental environmental regulations / laws	Lee (2008); Jones, et al. (2008); Vachon and Klassen (2006); Shang, et al. (2009)
2 The environmental requirements from the foreign customers and governments for the exported products	Sands and Ferraro (2010); Kotzab, et al. (2011); Lee (2008); Shang, et al. (2009)
3 Domestic consumers' environmental requirements on services and products	Jones, et al. (2008); Sands and Ferraro (2010); Kotzab, et al. (2011); Lee (2008); Shang, et al. (2009)
4 Supplier's advances in environmentally friendly services/products as well as packaging materials	Kotzab, et al. (2011); Lee (2008); Vachon and Klassen (2006)
5 Competitors' green strategies, to assure the organization's competitive position in the marketplace	Rao and Holt (2005); Lee (2008); Sands and Ferraro (2010); Vachon and Klassen (2006); Kotzab, et al. (2011); Shang, et al. (2009)
6 Industrial professional group activities focusing on the most up-to-date trends	Shang, et al. (2009); Jones, et al. (2008); Vachon and Klassen (2006); Lee (2008)
7 The organization's strategic environmental vision and mission	Norton (2010); Kotzab, et al. (2011); Vachon and Klassen (2006); Shang, et al. (2009); Lee (2008)

Table 1-3. Elements of barriers to going green

Elements of barriers to retailers' green initiatives	Literature sources supporting and inspiring the proposition of these elements
1 Cost for disposal of hazardous materials	Zhu, et al. (2005, 2010); Shang, et al. (2009); Lee (2008)
2 Cost of environmentally friendly materials and packaging	Lee (2008); Zhu, et al. (2005, 2010); Shang, et al. (2009)
3 Cost of purchasing environmentally friendly products and services	Zhu, et al. (2005, 2010); Shang, et al. (2009); Lee (2008)
4 Cost for fulfilling the requirements from the customer organizations for environmental friendly operations processes	Kotzab, et al. (2011); Shang, et al. (2009); Zhu, et al. (2005, 2010); Lee (2008)
5 Investment on the business processes and facilities for green programmes	Shang, et al. (2009); Kotzab, et al. (2011); Zhu, et al. (2005, 2010); Lee (2008)

Table 1-4. Element of willingness to lead green journey

Whether the retailers want to hold the leading role in the “greening” journey of a retail chain (network)	Literature sources supporting and inspiring the proposition of these elements
Whether an organization has stated the leadership in green retail operations and logistics process in its mission/ vision statement	Holt and Ghobadian (2009); Kotzab, et al. (2011); Norton (2010); Zhu, et al. (2005, 2010); Lee (2008)

The above identified elements were from previous research/publications, how much they are recognised currently by the real world retailers will be explored by this research, besides the investigation of the concrete green approaches currently in real world application.

### 3. METHODOLOGY

#### 3.1 Research strategy

The data for this research were collected through survey. Survey is an effective data collection method to seek opinions, attitudes and/or factual information and very frequently used in the fields such as supply chain management and retail operations (e.g., Heavey, et al., 2011; Vachon and Klassen, 2006; Lee, 2008; Ko and Kincade, 1997; Cherrett, et al., 2009).

The concrete research strategy is detailed at below:

1) By summarising and pondering on the previous research on green issues in the relevant fields, the green elements were identified and used as the content for the questionnaire (Appendix 2) developed for the survey.

The survey focuses on four aspects: I) Awareness of the retailers on the importance of green initiatives; II) Drivers and Barriers of green initiatives; III) Willingness of the retailers to lead a retail chain’s “greening” journey; IV) Strategies/practices currently applied by retailers for greening their business processes. For Aspects I and II, the informants were asked to judge the statements’ suitability on describing their respective organizations’ concrete green situation, on a 5-point scale (1-Strongly disagree to 5-Strongly agree). For Aspect III, they were asked to provide “yes/no” answers to the question and the reasons for “no”. For Aspect IV, they were asked to list their currently implemented green strategies/practices, which are effective/efficient in realising green. They were also given an extra space for their own additional viewpoints.

2) Structured interview was conducted with experts in the field of retail/supply chain operations for examining and validating research questions’ content. Interview is normally used to obtain information on people’s attitudes/opinions to certain issues and often applied in the field of retail operations (e.g., Norton, 2010; Sands and Ferraro, 2010; Vachon and Klassen, 2006).

3) After a pilot test and a minor refinement, survey investigation was carried out through researcher delivered/mailed questionnaires.

4) Descriptive statistic analysis and ANOVA analysis were conducted to generalise, compare and summarise the findings. ANOVA analysis is frequently used by researchers (e.g., Cherrett, et al., 2009; He, et al., 2011; Raghunathan, et al., 1997) in deciding whether to claim the concerned viewpoints or attributes, etc. are different between different groups.

### 3.2 Validity and reliability

#### 3.2.1 Validity of the research

The questionnaire was developed based on the identified green elements from published research, the authors endeavoured to triangulate the understandings of the questions from different literature; then the questions were verified through the structured interview with the experts in the relevant fields; the interviews were conducted with two Chinese and two British operations/general managers in retail sector, as well as one academic in the field of green supply chain research. By screening the questions through experts, the research instrument's content validity has been ensured (Yu, 2012; Kimberlin and Winterstein, 2008). As illustrated in Figure 1, the final evaluation results from the interviewees are very positive with average rating higher than 4 for majority of the questions (1 – Very inappropriate to 5 – Very appropriate), except ratings for two questions: 3.4 (Driver statement No. 2) and 3.6 (Driver statement No. 6). This is due to one of the Chinese managers thought that they might be difficult to be answered and thus gave a rather low rating. However, since the rest of the interviewees rated these two questions very high, they were kept in the questionnaire.

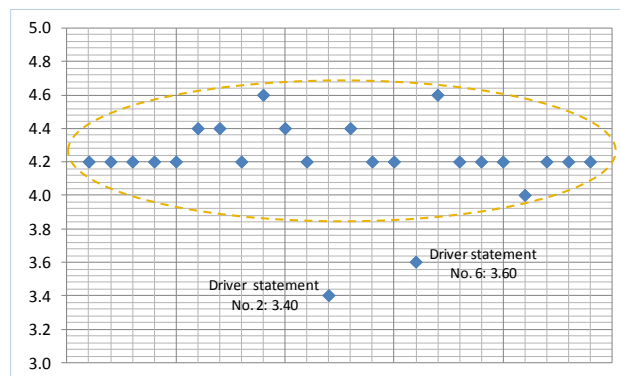


Figure 1. Appropriateness' average ratings on questions through interview

After the content validation, a pilot test with 5 retailers was conducted to ensure the questionnaire's clarity. After a minor refinement (approved by the experts) on wording following the feedback, the questionnaire was distributed for real world data collection. Retailers in China and UK were approached in the regions with representative country average economic level (Office for National Statistics, 2010; China Economy Net, 2010); the data in China were collected one month before the data collection in UK started; this ensured the China side data's primary sorting having been completed prior to the

commence of the UK side data collection. Such an arrangement informed the UK side focusing on the retail segments the same as those at China side for comparability. The sample retailers in this research are from three main segments in the UK and China, with the largest number of retailers respectively (McLaren, 2010; National Bureau of Statistics of China, 2013a,b). Thus as an exploratory research, the findings from these samples can provide constructive information for the whole sector besides these segments.

Based on the collected data, a factor analysis was applied to check the construct validity. Factor analysis is a popular way to examine the construct validity of an instrument (Yu, 2012; Kimberlin and Winterstein, 2008).

The communalities in Table 1-5 demonstrate that the investigation questions are appropriate. The elements and the theme clusters (factors) from the researchers' primary anticipation in Table 1-1 to 1-4 are all kept as effective, with the elements' loadings to the factors well above the threshold of 0.3 (Pastor, 2013) for both UK and China sides; the only difference is that for different elements to the respective factors, the loadings are normally not the same at the two sides, as illustrated in Table 1-6. These points attested the construct validity.

Evidenced by the significant factor loadings of each of the elements to the theme clusters, the convergent validity has also been attested, following Cole's contention (1987).

Table 1-5. Communalities corresponding to elements (survey questions)

Elements	Extraction		Elements	Extraction		Elements	Extraction	
	UK	China		UK	China		UK	China
Awareness/understanding of "green" Q1	0.80	0.77	Awareness/understanding of "green" Q9	0.79	0.77	Driver for going green Q7	0.84	0.62
Awareness/understanding of "green" Q2	0.86	0.76	Awareness/understanding of "green" Q10	0.80	0.70	Barrier to going green Q1	0.73	0.75
Awareness/understanding of "green" Q3	0.68	0.78	Driver for going green Q1	0.72	0.80	Barrier to going green Q2	0.69	0.80
Awareness/understanding of "green" Q4	0.75	0.83	Driver for going green Q2	0.74	0.62	Barrier to going green Q3	0.77	0.66
Awareness/understanding of "green" Q5	0.67	0.70	Driver for going green Q3	0.69	0.75	Barrier to going green Q4	0.71	0.70
Awareness/understanding of "green" Q6	0.80	0.68	Driver for going green Q4	0.71	0.66	Barrier to going green Q5	0.76	0.75
Awareness/understanding of "green" Q7	0.79	0.73	Driver for going green Q5	0.81	0.60	Willingness to lead "greening"	0.78	0.61
Awareness/understanding of "green" Q8	0.65	0.66	Driver for going green Q6	0.80	0.76			

Table 1-6. Loadings of elements to factors

Factor	Elements' loading range	
	UK	China
Awareness/understanding of "green"	0.541 ~ 0.916	0.462 ~ 0.901
Drivers for going green	0.483 ~ 0.803	0.65 ~ 0.804
Barriers to going green	0.437 ~ 0.669	0.681 ~ 0.955



### 3.2.2 Reliability of the research

For testing and verifying the reliability of survey questionnaire instrument, Cronbach's  $\alpha$  is commonly used (e.g., Wee and Quazi, 2005; Wu, et al., 2004) and  $\alpha$  value of 0.7 or higher indicates an acceptable reliability (Wortzel, 1979; Santos, 1999). To enhance the reliability check, Spearman-Brown prophecy is also used (e.g., Engs, 1996) as a supplementary method. The calculated Cronbach's  $\alpha$  values as well as the Spearman-Brown reliability coefficients from this research's data at China and UK sides respectively are 0.78 and 0.83 (Cronbach's  $\alpha$ ) and 0.93 and 0.95 (Spearman-Brown coefficient), which confirm that the survey has a trustful reliability.

To avoid the response bias, especially the effects from received wisdom in terms of the informants intending to be politically correct and embracing the whole idea of green operations, following contentions of Leavitt (1977) and Paulhus (1991), the authors have carefully designed and piloted/refined the questionnaire and assured strictly the anonymity to all informants during research conduction, and checked the bias by triangulating between data collected through researcher personally administered and that through mail. Research (Wiseman, 1972; Leavitt, 1977) has revealed that mail surveys are less subject to response bias compared to the researcher administered, thus a comparison between the data from the two modes can tell whether significant bias exists. From this comparison, the T-test scores at the UK side (p value ranging from 0.46 to 0.89) and Z-test scores at China side (p value ranging from 0.51 to 0.83) respectively illustrate no significant difference (bias) at 95% confidence level, thus the data collected can be relied on for meaningful findings.

## 4. FINDINGS FROM THIS RESEARCH

### 4.1 General profile of the sample retailers

In both China and UK, The organisational size of the sample retailers range from only a few people to more than thousands. Figure 2 illustrates the distribution of the sample Chinese and British retailers in size of employee numbers, following the classification of enterprises from De Chiara and Minguzzi (2002) and Sadi and Iftikhar (2011).

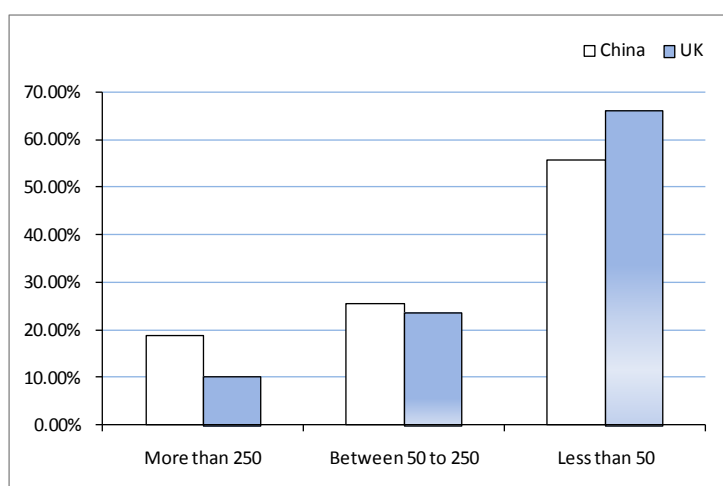


Figure 2. Distribution of the sample British/Chinese retailers in size of employee numbers

In China, questionnaires were distributed to 558 retailers with available contact information on the yellow page (China114Yellowpage, 2011). The number of the returned effective questionnaires was 156. Communication with the sample retailers prompted this relatively high feedback rate of 26.1%, compared with some of the similar type research with a feedback rate as low as 10% (Baruch and Holtom, 2008). According to the classification of retailers in UK (McLaren, 2010), the segments of retailers from which the majority data in China were collected are: Food stores – non-specialised stores, Non-food stores – clothing/footwear stores and Non-food stores – electrical/music goods stores. Following the same classification, to ensure the comparability, the British retailers approached in this research were also from these segments. The questionnaires were distributed to 160 British sample retailers with detail contact information on the yellow page, 59 of them filled in the questionnaire completely, producing an effective return rate of 36.9%, which is higher than that at China side. This was due to that around thirty percent of the questionnaires were researcher personally delivered and collected, which promoted the informants' participation in the research.

## 4.2 Findings and discussion

### 4.2.1 Descriptive summarisation

Table 2 summarises the range of the average scores of the answers to the question statements in Aspect I (Awareness of the importance of green operations), Aspect II (Drivers and Barriers for going green) and percentage of affirmative answers for Aspect III (Willingness to lead green initiatives).

Table 2. Range of the average scores/percentage for the statements

Aspects focused by the research	I	II	II	III
Aspect content	Awareness/ understanding of the importance of green operations	Drivers for going green	Barriers for going green	Willingness to lead green initiative (percentage of "yes" answers)
Range of the average rating – Chinese retailers	3.53 ~ 4.23	3.82 ~ 4.44	3.70 ~ 4.05	70.50%
Range of the average rating – UK retailers	3.22 ~ 3.95	3.61 ~ 4.20	3.58 ~ 4.03	52.50%

Table 3. Average scores of the answers to the individual statements

Awareness Statement No.	1	2	3	4	5	6	7	8	9	10
Average rating – Chinese retailers	3.53	3.77	4.23	3.94	3.76	3.60	3.72	3.92	3.70	3.54
Average rating – UK retailers	3.66	3.90	3.75	3.66	3.44	3.51	3.51	3.46	3.22	3.95
Drivers Statement No.	1	2	3	4	5	6	7			
Average rating – Chinese retailers	4.44	4.30	4.41	3.89	3.87	4.04	3.81			
Average rating – UK retailers	4.14	4.10	3.86	3.69	3.76	3.61	4.20			
Barriers Statement No.	1	2	3	4	5					
Average rating – Chinese retailers	4.05	3.70	3.87	4.05	3.85					
Average rating – UK retailers	3.78	3.92	3.80	4.03	3.58					

Table 2 reveals that the retailers all have a certain level of awareness of green initiative and its importance. However, as revealed by Table 3, majority of the average judgment ratings are less than 4; thus it is also reasonable to argue that the awareness still needs to be further enhanced. This finding resonates with the same arguments from researchers (e.g., Zhu, et al., 2005; Kotzab, et al., 2011).

Details in Table 3 demonstrate a relatively high level of recognition of the drivers and barriers for the retailers to pursue green initiatives.

The retailers have also proposed additional drivers for going green (by more than 60% of the informants), which include: 1) the awareness of people for preventing their health from being affected by environmentally detrimental activities; 2) decreased cost of the environmental friendly materials and increased recyclability/reusability of materials; 3) governmental financial support to green initiatives; 4) the awareness from the public to the positive link between environmental protection and natural disasters' prevention; 5) increased business competitiveness through green operations and consequentially enhanced corporate image.

The retailers (more than 60% of the informants) also proposed additional barriers hindering a green scheme: 1) return on the investment (ROI) on environmental friendly products/services cannot be substantiated; 2) environmental friendly products have not

obtained large enough market share; 3) insufficient awareness of the importance of environmental protection from public; 4) insufficient governmental policy/financial support to green initiatives; 5) lack of recognition of retailers as a leading organization in the retail chain to coordinate its members' green activities; 6) lack of experienced professionals to design and carry out green schemes.

For the willingness of the retailers to lead the green initiative in a retail chain, 70.5% of the Chinese retailers are willing to do so. For the British retailers, the "yes" answers count to 52.5%, lower than that of the Chinese retailers. In general, one can confidently argue that majority Chinese and marginal majority British retailers are willing to lead in the green process. However, there are still a certain amount of sample retailers, especially at UK side did not set leading green initiative as a component of their mission/vision, the reasons (proposed by more than 60% from those sample retailers answering "no") for not willing to lead the green journey are in Appendix 1.

These reasons inform the managers in businesses to allocate resources and avoid the pitfalls when they employ green approaches serving their business development.

#### 4.2.2 ANOVA analysis

The authors assumed that between retailers of different type, size and in different countries, there might be a difference on the judgement ratings on the statements listed in the focused Aspects. Namely the points here to be of interest are:

i) Whether there is difference on the viewpoints between the different type retailers in each subgroup-in-size within each country. From this phase, the authors can tease out the statements for like vs. like comparison on their ratings between Chinese and British retailers pair-wise in each subgroup-in-size (of employee numbers); while the rest of the statements will through next phase be determined whether they should be compared as subgroups-in-size or as respective wholes between China and UK sides; ii) Whether there is difference on the viewpoints between different sized retailers within the sample retailer group of each country. This phase can help the authors tease out the statements that need to be compared as subgroups-in-size pair-wise between Chinese and British ones; consequentially, the rest of the statements can be compared between British and Chinese sample retailers as two respective wholes.

The above mentioned analysis logic is depicted by Figure 3.

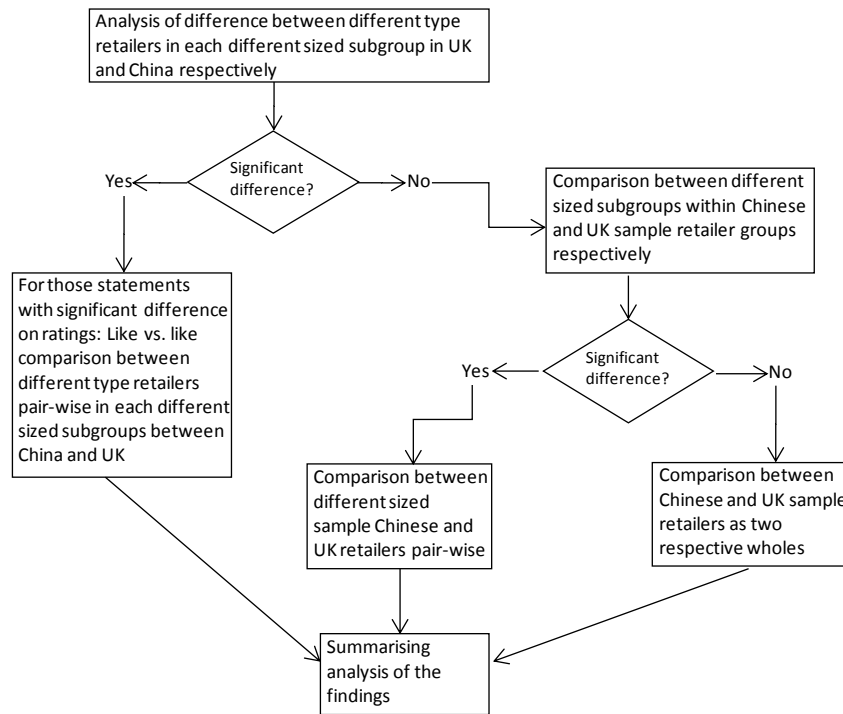


Figure 3. Phases and corresponding contents for ANOVA analysis

Table 4 lists respectively the question statements with significant different ratings to be compared like vs. like as well as between Chinese and British subgroups-in-size; Table 5, 6, 7 summarise the comparison results of the like vs. like, between Chinese and British subgroups-in-size and between Chinese and British retailers as two respective wholes.

Table 4. Question statements to be compared like vs. like and between Chinese and British subgroups-in-size

Question statement needed to be compared like vs. like in type under each subgroup-in-size between Chinese and UK retailers	D5
Question statement needed to be compared on each subgroup-in-size between Chinese and UK retailers	D7

Table 5. Comparison between Chinese and British retailer groups like vs. like

Question No.	Subgroup with significantly higher average score	P-value (at confidence level of 95%)
D5	Chinese small sized electrical/music goods retailers (to their UK counterparts)	0.019

Table 6. Comparison between Chinese and British retailer subgroups-in-size

Question statement No.	Subgroup with significantly higher average score	P-value (at confidence level of 95%)
D7	UK Large sized retailers (to their Chinese counterparts)	0.034
	UK middle sized retailers (to their Chinese counterparts)	0.005

Table 5 tells that Chinese small sized electrical/music goods segment retailers are emphasising more on statement 5 of Drivers for going green. Namely, Chinese retailers in this segment are more sensitive than their British counterparts to the competitors' green strategies for assuring their position in the marketplace. Table 6 reveals that British large and medium sized retailers are emphasising more than their Chinese counterparts on the built-in drive for green initiatives in their corporate mission/vision. This adds new insights to the claim that majority of British large retailers committed to foster green into their business strategy (Centre for Retail Research, 2012).

As a consequence of the above findings, one can argue that except Driver statements 5 and 7, the different sized retailers within the Chinese and British sample groups respectively do not have significant difference on their judgements on the rest of the statements. Namely, except these two elements, Chinese and British sample retailers respectively have a similar level of within group consensus on: the importance of green operations; the recognition level of nearly all the green drivers, all the green barriers and the leadership willingness for green initiatives. This fostered a solid foundation for a comparative analysis between Chinese and British retailers as two respective wholes.

Table 7 summarises the comparison result between Chinese and British retailers as two respective wholes (less those compared like vs. like and between subgroups-in-size).

Table 7. Comparison between Chinese and British retailers as respective wholes

Question statement No.	Retailer group with significantly higher average score	P-value (at confidence level of 95%)
II3	Chinese	0.005
II8	Chinese	0.002
II9	Chinese	0.004
II10	UK	0.031
D1	Chinese	0.03
D3	Chinese	0.0001
D6	Chinese	0.006
IV	Chinese	0.004

From Table 7, one can argue that Chinese sample retailers as a whole demonstrate the following characteristics more saliently than their British counterparts:

- 1) Emphasising on understanding that green activities can help reduce the use of hazardous/harmful/toxic materials and the possibility of environmental accidents;
- 2) Endeavouring in cultivating in their employees' mindset the care of environment;
- 3) Acting on establishing environmental management system and allocating responsibilities and resources for that;
- 4) Green activities are reacting to the governmental environmental regulations/laws;
- 5) Implementing green initiatives in order for fulfilling the consumers' environmental requirements on services and products;
- 6) Green activities are implemented to follow the industrial professional group activities to catch up with the most up-to-date trends.

From the above characteristic attributes of Chinese retailers' green activities, one can contend that the main characteristic of Chinese retailers' current green initiatives is more of a reactive action to the external requirements and pressure.

For the British sample retailers as a whole, one can summarise the following salient attributes different from their Chinese counterparts:

- 1) More confident in the sufficiency of their knowledge and technology to deal with relevant environmental issues;
- 2) Large and medium sized retailers are significantly active in making green awareness and initiative as a built-in component of their strategic visions/missions, thus they have a more powerful internal drive for going green. This reflects a higher level of understanding and commitment from British large (Centre for Retail Research, 2012) and medium sized retailers towards green and enriches the current understanding of the green status of different sized British retailers.

#### 4.3 The currently implemented strategies/practices

The retailers in this research have also proposed their currently implemented effective/efficient green strategies/practices (Table 8).

Table 8. Summary of the implemented green strategies/practices (with more than 60% of sample retailers' consensus in the respective countries)

UK retailers	Chinese retailers
High level commitment/ support for green initiatives from all level managements	Not mentioned
A well coordinated functional engagement towards the green initiative	The same
Environmental management practices become one of the key elements in quality management/ improvement programmes	The same
To comply with environmental standards and implement auditing programmes through a third party's involvement (e.g., ISO 14001	The same
Actively provide technical and management support to suppliers (especially SMEs) for designing environmental friendly products and processes	No
Actively seek cooperation with customer organizations for environmental friendly designs and operational processes, green packaging and production	No
Seek the design of products and components with the attributes of reuse, recycle and recovery of materials	The same
Require/encourage the suppliers to design products without or with less usage of hazardous materials, components and producing processes	The same
Seek the positive usage of excessive materials/ equipments and capacity	The same

From Table 8, one can find that some popular green approaches promoted by researchers (e.g., Rao and Holt, 2005; Zhu, et al., 2010) have been implemented within British retail sector. Majority of those implemented in UK have also been in implementation by the Chinese retailers, nevertheless there are still a few strategies/practices having not been implemented by majority Chinese retailers, reflecting that Chinese businesses are still at an early stage of greening their operations, this is in accordance with the argument from Zhu, et al. (2005, 2010). However, one can also reasonably argue that the Chinese retailers have a potential to catch up with their British counterparts in the foreseeable future, based on their awareness of green, especially their stronger willingness for leading green initiatives. Thus any complacency and slowdown of green activities can result to the loss of one important competitive advantage from British retailers or any other retailers with similar situation.

## 5. CONCLUSIONS, IMPLICATIONS, LIMITATION AND FUTURE RESEARCH

### 5.1 Conclusions

#### 5.1.1 Awareness of importance of green and willingness to lead green initiatives

The findings from this research reveal that there certainly are awareness and understanding of the importance of the green operations from both British and Chinese retailers. The large and medium sized British retailers demonstrate a higher level of internal drive and competence/knowledge for going green, and they have higher level of capability for implementing green initiatives. Small sized British retailers did not possess obvious



advantages over their Chinese counterparts. Nevertheless, the foreign retailers currently operating actively in Chinese marketplace are not small sized ones (Liu, 2007; Fan, 2010). Majority Chinese and marginal majority British retailers are willing to function as a leading figure in the retail chains' green initiatives, reflecting the positive recognition of the importance of green activities from the retail businesses; this also illustrates the retailers' proactive attitude towards environmental issues. British retailers demonstrated a lower level than their Chinese counterparts of leadership willingness for a retail chain's green journey. The reasons for negative attitude towards leadership of green retail chain initiatives are detailed in Appendix 1. Majority of these reasons are the same for both British and Chinese retailers; nonetheless, the British retailers have two salient points different from their Chinese counterparts: 1) due to the impact from the recent economic downturn, some retailers lack of resources available to input into green schemes; 2) some retailers are content with their current green status and do not deem it necessary to devote further effort for green initiatives.

In summary, green strength would be an advantage for British retailers (and any other retailers with same situation) to achieve successful survival and profit in Chinese marketplace, especially through cooperation with and facilitation to their suppliers/customers in green approaches' application and development. They should bear in mind the drivers and barriers for going green when developing concrete strategies and action plans for winning the competition.

Basing on and extending the previous research, this research has identified new drivers/barriers for retailers going green. The main drivers and barriers for green initiatives are summarised at below (including the newly identified ones from this research).

#### 5.1.2 Main "greening" drivers

- Government environmental regulations/laws/financial support;
- Environmental requirements from the foreign customers and governments for the exported products;
- Domestic consumers' environmental requirements on services and products;
- Catching up with the supplier's advances in green services/products and packaging materials;
- Reacting to the competitors' green strategies, to assure the competitive position in marketplace;
- Being in accordance with industrial professional group activities to follow the most up-to-date trends;
- Achieving the organization's strategic environmental vision/mission;
- Awareness from the public for preventing their health from being affected by environmentally detrimental activities;

- Decreased cost of the environmental friendly materials and increased recyclability/reusability of materials;
- Awareness from the public to the positive link between natural disasters' prevention and the environmental protection;
- Increasing competitiveness of the business through green operations to enhance corporate image, to gain more customers and keep their loyalty.

#### 5.1.3 Main barriers to "greening"

- Higher cost for disposal of hazardous materials;
- Cost of environmental friendly materials and packaging;
- Cost of purchasing green products and services;
- Cost for fulfilling the environmental requirements from the customer organizations;
- Increased investment on the business processes and facilities for green schemes;
- ROI on green products/services cannot be substantiated;
- Green products having not obtained sufficient market share;
- Insufficient awareness and understanding of the importance of environmental protection from public;
- Insufficient governmental policy/financial support to retailers leading green initiatives;
- Lack of recognition of retailers as a leading organization in the retail chain to coordinate its members' green activities;
- Shortage of experienced professionals to design and carry out green schemes.

#### 5.1.4 Currently implemented green strategies/practices

Table 8 lists the identified green approaches currently being implemented by British/Chinese retailers. Compared with Chinese retailers in green initiatives, British retailers are better in some dimensions, which may be used to obtain competitive advantage when operating in Chinese marketplace; and meanwhile which are also the main foci for Chinese retailers to improve themselves:

- High level commitment/support to green initiative from all level managements;
- A built-in driving force through embedding green initiative in the businesses' visions/missions;
- Sufficient knowledge and technology for going green;
- Actively providing technical and management support to suppliers for designing environmental friendly products and processes;
- Actively seeking cooperation with customers for environmental friendly design and operational processes, green packaging and production materials.

This research also highlights: 1) governmental policy and support (including financial investment) for businesses' implementation of green initiatives are an important external propelling force; 2) commitment to increase the green awareness from the public is also critical to the success of retailers' green projects, especially when retailers assume a leading role in the green campaign. The emphasis on these two points is reflected as they are regarded as both the drivers and barriers.

## 5.2 Implications

The research findings enrich the theoretical knowledge pool of the difference and similarity of the importance awareness of, drivers/barriers for and leadership willingness of green initiatives from retailers in the UK and China, as well as the current green practices, with new insights obtained; meanwhile from the general management perspective, the retail businesses can benefit from the informing and constructive guidance of the research findings, the management can harness the advantages of implementing the identified and practically affirmed green approaches, and can be better prepared to enjoy the support of drivers for going green and to deal with the barriers.

## 5.3 Limitation

Although solid learning, new insights and currently implemented practical green approaches have been obtained through this research, limitation still exists:

The retail segments included for comparison are not exhaustive, also in view of the relatively small sample size at UK side, there is a possibility that the findings still have space to be enriched. Nevertheless, as the result of an exploratory investigation and used to constructively inform retailers in developing competitive green strategies/practices under Chinese context, the findings are effective.

## 5.4 Future research

Starting from current research outcomes, future research work can be conducted to enrich and extend the findings:

- Extend the scale of the survey to have more participating retailers in numbers as well as in segments, for more and further insights on the issues relevant to retail chain's green initiatives;
- Focusing on Chinese marketplace, for providing guidance on increasing the retailers' competitive strength, it is meaningful to conduct a longitudinal study in the near future to further investigate what and how the best practice strategies/approaches are applied by the retailers for establishing and maintaining a greener retail chain and tackling the problems occurred during the greening process.

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## Appendix 1. Summary of the reasons for not willing to lead green journey of a retail chain

Summary for Aspect III	Reasons from Chinese retailers	Reasons from UK retailers
No willingness to lead green initiative of a retail chain	1) Retailers do not consider external retail chain members' green operations/ logistics as a key part of their business concern; 2) Environmental friendly activities do not bring much profit for retailers, thus no budget set to cover the cost of green activities; 3) Insufficient support from the society; 4) Too high cost for implementing green strategies; 5) Top-down strategy determination process hinder a clear statement and organizational wide buy-in of green concept/ initiative; 6) Lack of awareness and recognition of the importance of green initiatives to be a part of corporate mission; 7) Many customers currently do not cast very heavy request on green aspect of products/ services.	Points 1, 2, 5, 6 at left from Chinese retailers were also proposed by the UK retailers, especially small ones. Plus: a) Many small retailers and even medium sized ones pointed out, within current economic context, their main focus is on how to survive successfully, they have no resources for other issues; b) Some retailers believe that they have been doing well for greening operations and logistics; there is no need for additional efforts of green initiatives.

## Appendix 2

*Main content of the questionnaire (close-ended questions with alternative answers and open-ended questions):*

### 1. General questions about your company

1) What are the main operations foci of your business? (e.g., Food retailing, Clothing retailing)

\_\_\_\_\_

2) How many employees (full time equivalent) do you currently have in your business?

- Less than 50
- 50 to 250
- More than 250

OR employee numbers if you like to tell: \_\_\_\_\_

3) Is your business operating at national level or international level (namely, having branches in other countries)?

- National
- International

**2 (Aspect I).** For awareness (understanding/acceptance) of the importance of green initiatives, please indicate how much you agree or disagree with the following statements (5-Strongly agree, 4-Agree, 3-Unsure, 2-Disagree, 1-Strongly disagree):

1) In my company, the concept of green operations and logistics has been accepted and all employees recognize its importance

- Strongly agree
- Agree
- Unsure
- Disagree
- Strongly disagree

2) Employees in my organization recognize that through green activities, we can achieve the reduction of wasted water, materials and air pollution

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

3) Employees in my organization believe that through green activities, we can realise decreased use of hazardous/harmful/toxic materials and reduce the possibility of environmental accidents

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

4) Employees in my organization notice that through green activities, we need to invest more into the business (including additional machines/instruments, training, environmental friendly materials, etc.)

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

5) By pursuing green initiatives, the cost for waste treatment and the cost for materials and energy consumption will be reduced

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

6) By pursuing green initiatives, delivery service and operations capacity usage have been improved, as well as inventory level has been reduced

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

7) By pursuing green initiatives, the organization has increased the quality performance level and reduced the scrap rate

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

8) Within the organization, the environmental issues/information have been well communicated and shared among the different departments and employees

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

9) We have established an environmental management system within our organization with correspondingly responsible functional units and allocated human resources and financial investment

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

10) We have sufficient knowledge and technology to deal with relevant environmental issues

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

### 3 (Aspect II). Drivers and Barriers for going green:

#### *Part1: Drivers*

1) Need to follow the governmental environmental regulations/ laws

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

2) Need to follow the environmental requirements from the foreign customers and governments for the exported products

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

3) Follow domestic consumers' environmental requirements on services and products

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

4) Need to catch up with the supplier's advances in environmental friendly services/ products as well as packaging materials

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

5) React to the competitors' green strategies, to assure the organization's competitive position in the marketplace

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

6) In accordance with industrial professional group activities to follow the most up-to-date trends

• Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

7) To achieve the organization's strategic environmental vision and mission

- Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

8) What other points will you propose as strongly agreed Drivers for going green?

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*Part2: Barriers*

1) Higher cost for disposal of hazardous materials

- Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

2) The cost of environmental friendly materials and packaging

- Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

3) The cost of purchasing environmental friendly products and services

- Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

4) Cost for fulfilling the requirements from the customer organizations with regard to the environmental friendly operations processes

- Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

5) Increased investment on the business processes and facilities for green programmes

- Strongly agree      • Agree      • Unsure      • Disagree      • Strongly disagree

6) What other points will you propose as strongly agreed Barriers for going green?

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(Aspect IV) ***Approaches for going green***

Please list the main effective/efficient strategies/practices currently you have applied in your business for going green:

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_

Add any more points you may have.

**4** (Aspect III). Whether the retailers want to hold the leading role for coordinating the associated organizations in the “greening” journey of a retail chain.

Has your organization stated clearly in your mission/vision statement that assuming leadership in green retail operational and logistics process is a part of your strategic goals?

- Yes
- No

If the answer is “No”, why?

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